

REMARKS

Claims 1-18 and 43-64 are pending in the present application. Claim 42 has been canceled. Claims 1, 17, 43, 45-46, 50 and 64 have been amended. Reconsideration of this application in view of the above amendments and the following remarks is respectfully requested. The individual issues raised by the examiner are addressed next in the order in which they appear in the Office Action.

ELECTIONS/RESTRICTIONS

The present application, as filed, contained 64 claims. On June 26, 2002, a first restriction requirement was issued dividing all claims into three groups: (I) 1-18, 25-35 and 42-64; (II) 19-24; and (III) 36-41. Applicants elected claims in Group I. Subsequently, on November 1, 2002, a second restriction requirement was issued that divided all claims into five groups: (I) 1-18 and 42-49; (II) 25-35; (III) 50-64; (IV) 19-24; and (V) 36-41. Applicants elected claims in Group I. Upon further consideration, in the Office Action, the Examiner permitted claims 1-18 and 42-64 to remain in the prosecution. The Examiner confirmed this claim selection in a telephone interview conducted on May 20, 2003 with Michael Fainberg (Reg. No. 50,411). Accordingly, claims 1-18 and 43-64 are pending in the present application and claims 19-41 are withdrawn from the prosecution. Applicants expressly reserve the right to prosecute one or more applications directed to the subject matter of the canceled claims or other subject matter disclosed in the present application.

OBJECTIONS TO CLAIMS 1, 18, AND 50 ARE OBIATED

In paragraph 2 of the Office Action, claims 1, 18, and 50 were objected to because of informalities. Applicants wish to express their gratitude to the Examiner for his careful review of the application. Applicants have amended claims 1, 18 and 50 as suggested by the Examiner. Accordingly, applicants respectfully request that the objections be withdrawn.

CLAIMS 16-17 AND 63-64 ARE DEFINITE UNDER 35 U.S.C. § 112

In paragraphs 3 and 4 of the Office Action, claims 16-17 and 63-64 were rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. In particular, the Examiner requested clarification with respect to the structure intended by the magnet assembly to receive core material. Applicants respectfully traverse.

The magnetic assembly of the present invention can be used for NMR analysis on samples of a geologic formation, such as a core material from the drilled rock. (See, e.g., p. 13, ll. 3-13 of the application.) The limitation in claims 16 and 63 that the assembly is

"adapted to receive within the enclosed volume core material from drilled rock" merely indicates that such assembly must be dimensioned as to enable receiving core material within the enclosed volume, and is not tied to any particular structure. Accordingly, applicants respectfully request that the Section 112 rejection of claims 16 and 63 be withdrawn.

With respect to claims 17 and 64, to avoid any ambiguity, applicants have amended the claims to delete the expression "equipment designed to measure." Amended claims 17 and 64 recite a magnet assembly further comprising equipment measuring magnetic resonance signals, which is believed in compliance with the requirements of Section 112. Applicants respectfully request that the Section 112 rejection of claims 17 and 64 be withdrawn.

CLAIMS 1-18 AND 43-64 ARE PATENTABLE

In paragraphs 5-8 of the Office Action, all pending claims 1-18 and 42-64 were rejected under 35 U.S.C. § 103 (a) as being unpatentable over U.S. Patent No. 4,703,276 issued to Beer (hereinafter "Beer") in view of the cited prior art. In particular, claims 1-14 and 16-17 were alleged to be obvious over Beer in view of U.S. Patent No. 4,931,760 issued to Yamaguchi et al. (hereinafter "Yamaguchi"). Claims 15, 42-49 and 62 were alleged to be obvious over Beer in view of Yamaguchi and further in view of U.S. Patent No. 5,148,138 issued to Miyata (hereinafter "Miyata"). Claims 18 and 50-64 were alleged to be obvious over Beer in view of Yamaguchi and further in view of U.S. Patent No. 4,727,327 issued to Toyoshima et al. (hereinafter "Toyoshima"). Applicants respectfully traverse.

I. THE PRIOR ART OF RECORD DOES NOT DISCLOSE, TEACH OR SUGGEST THE USE OF GAPS BETWEEN THE ADJACENT MAGNETS TO PERMIT MAGNETIC FLUX BETWEEN THE ADJACENT MAGNETS TO SUBSTANTIALLY EXTEND INTO THE REGION SURROUNDED BY THE MAGNETS

In paragraphs 6 and 7 of the Office Action, claims 1-14 and 16-17 were rejected for being obvious over Beer in view of Yamaguchi, and claims 15, 42-49 and 62 were rejected for being obvious over Beer in view of Yamaguchi and further in view of Miyata, respectively. Applicants respectfully traverse these rejections because the references do not disclose, teach or suggest the use of "gaps between the adjacent magnets to permit magnetic flux between the adjacent magnets to substantially extend into the region surrounded by the magnets," as recited in the independent claims 1, 43 and 50.

Beer teaches a magnetic assembly that comprises plurality of discrete permanent magnet segments angularly mounted within a plurality of non-magnetic rings to produces a homogeneous magnetic field in a predetermined volume. (Beer at col. 2, ll. 40-50)

Substantially similar magnetic structure is described in the background section of the application with reference to Fig. 1. A particular feature of such a magnetic structure is that spacing between adjacent magnets is very small to ensure that magnetic field is largely uniform. In fact, Beer teaches that adjacent magnets of his assembly are laterally and axially movable to achieve magnetic field uniformity in a portion of the interior volume. (Beer at col. 5, ll. 38-40) Notably, Beer does not teach that gaps between adjacent magnets permit magnetic flux between the adjacent magnets to extend substantially into the region surrounded by the magnets, as illustrated, for example, in Figs. 3 and 4 of this application. In fact, such gaps create inhomogeneities in the magnetic field in portions of the interior volume, as taught by the present application, which are clearly undesirable in the Beer reference. Applicants further note that present application is related to magnetic resonance measurements, not just MRI as suggested in paragraph 6 of the Office Action.

Yamaguchi and Miyata references do not interfere with patentability of the independent claims 1 and 43 (and 50) for substantially similar reasons, as neither reference discloses or suggests the use of gaps permitting the magnetic flux between the adjacent magnets to extend substantially in the surrounded region. Since dependent claims 2-18 and 44-49 include the limitations of the their respective independent claims, the reasoning presented for the traversal of rejections of the independent claims will also apply to their patentability. Accordingly, applicants respectfully request the Examiner to withdraw the Section 103 rejections of claims 1-17, 43-49 and 62.

II. THE PRIOR ART OF RECORD DOES NOT TEACH, DISCLOSE OR SUGGEST THE USE OF A HIGH PERMEABILITY RING DISPOSED AROUND THE MAGNETS

In paragraph 8 of the Office Action, claims 18 and 50-64 were rejected as being obvious over Beer in view of Yamaguchi and further in view of Toyoshima. In particular, the Office Action asserted that Toyoshima discloses a ring structure surrounding the magnets. Applicants respectfully traverse.

With respect to rejection of claim 18, applicants submit that it is dependent on claim 1 and therefore is believed to be patentable over the prior art of record for the reasons set forth above. In particular, Toyoshima fails to supplement the disclosures in Beer or Yamaguchi in a manner that would affect the patentability of claim 1. Independent claim 50 is believed patentable for substantially the same reasons.

In addition, with respect to the rejection of claims 50-64, applicants submit that, Toyoshima does not teach, disclose or suggest the use of a high permeability ring disposed

around the magnets to provide a path for magnetic field lines of the magnets to extend into the region surrounded by the magnets, as recited in the independent claim 50.

Accordingly, applicants submit that independent claim 50 is patentable over the prior art of record. Since the dependent claims 51-64 include all limitations of the independent claim 50, the reasoning presented for the traversal of rejections of the independent claims will also apply to the patentability of the dependent claims. Therefore, applicants respectfully request that the Section 103 rejections of claims 50-64 be withdrawn.

CONCLUSION

In view of the above-identified claim amendments and traversals of the Examiner's rejections, applicants respectfully submit that claims 1-18 and 43-64 are patentable.

Included with this response is a petition for extension of time for a period of two month, up to and including July 13, 2003. July 13, 2003 falling on Sunday, this response is due Monday, July 14, 2003. No other fee is believed to be due for this response. In the event that any additional fee is required, please charge such a fee or credit any overpayment to Pennie & Edmonds LLP Deposit Account No. 16-1150.

Date: July 14, 2003

Respectfully submitted,

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I hereby certify that this paper is being filed with the United States Patent and Trademark Office by facsimile transmission on July 14, 2003 to facsimile telephone number 1-703872-9318.

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